Mastery Assessment of Unit 2 (Practice version 113)

Question 1

Let f represent a function. If $f[12] = 42$, then there exists a knowable solution to the equation below.

$$y = \frac{f[3x + 6] + 38}{8}$$

Find the solution.
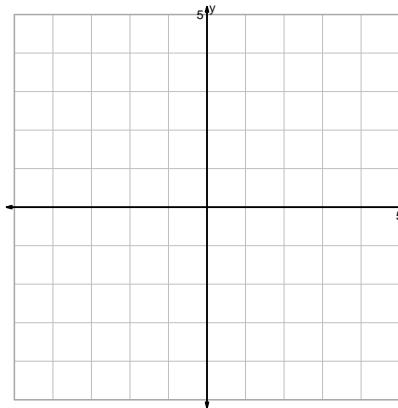
$x =$

$y =$
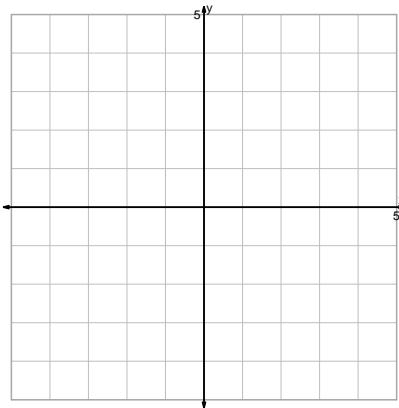
Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

$y = \left(\dfrac{x}{2}\right)^2$


$y = \sqrt{x - 2}$
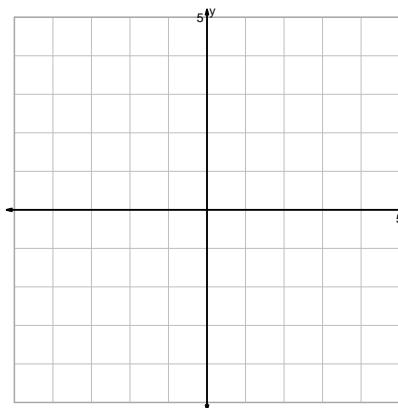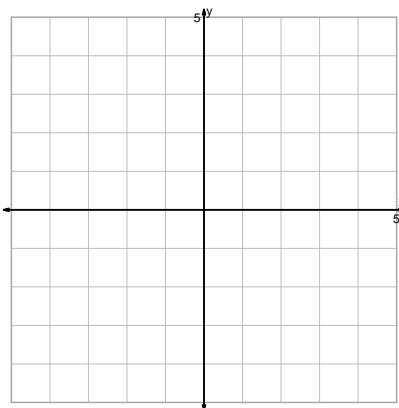
$y = \dfrac{x^3}{2}$
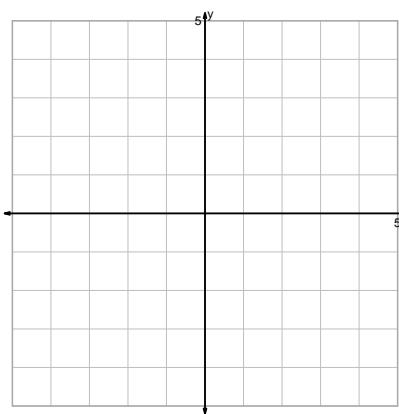
$y = 2 \cdot \log_2\left(x\right)$
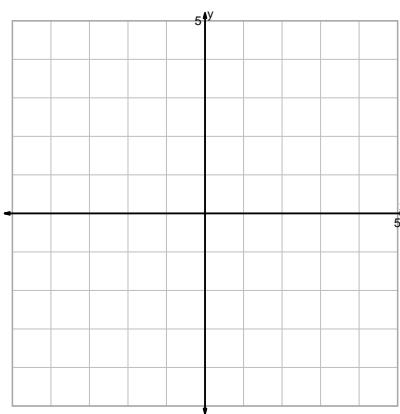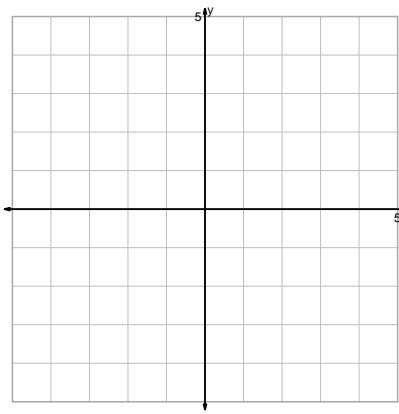
$y = 2^{2x}$
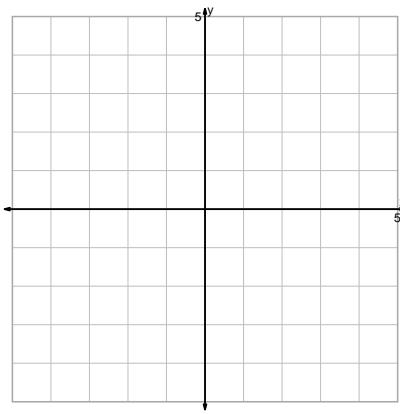
$y = -\sqrt{x}$
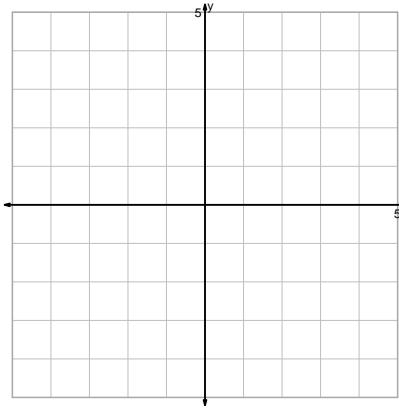
$y = \log_2\left(-x\right)$
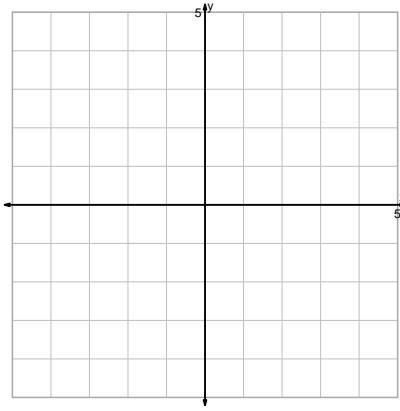
$y = \sqrt[3]{x} - 2$

$y = \left(x + 2\right)^2$
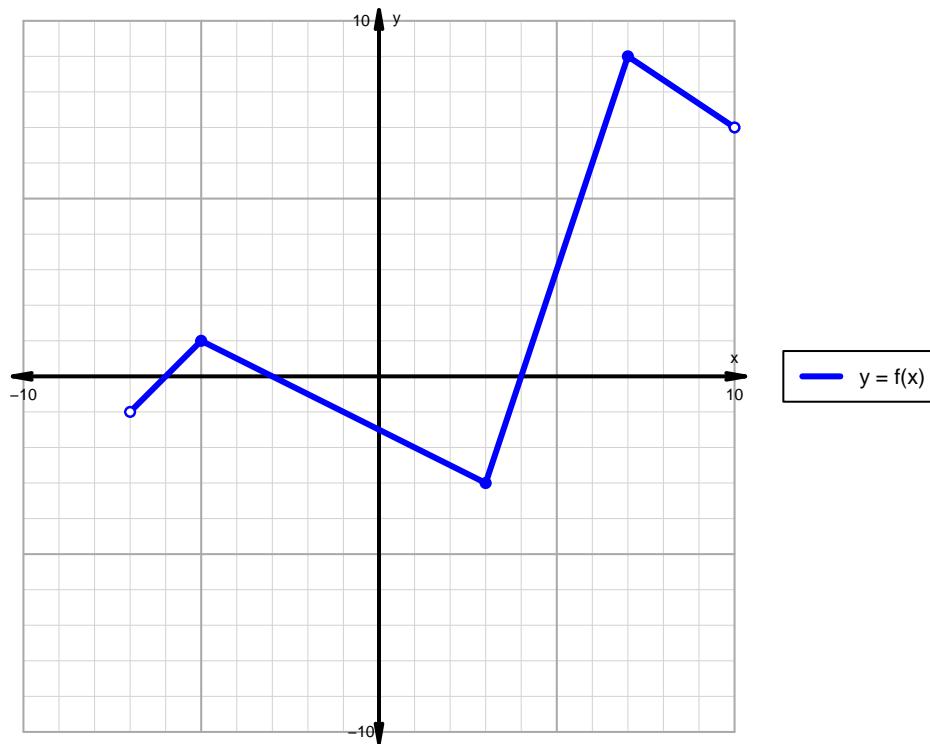
$y = \sqrt[3]{x} + 2$

Question 3

A function is graphed below.
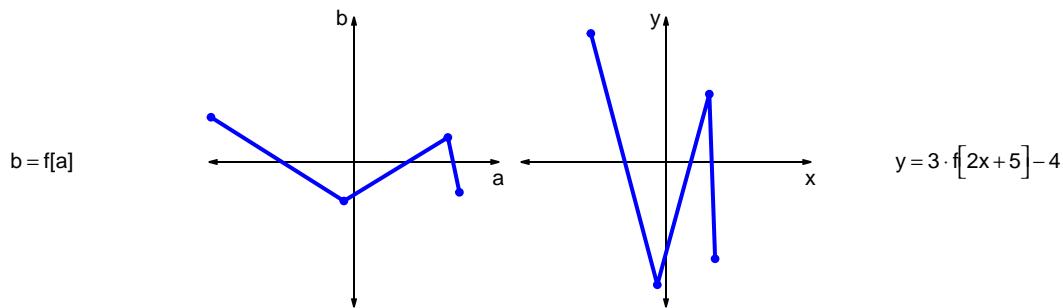
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = 3 \cdot f[2x + 5] - 4$ are represented below in a table and on graphs.

a	b	x	y
-99	31	-52	89
-7	-27	-6	-85
65	17	30	47
73	-21	34	-67

$b = f[a]$

$y = 3 \cdot f\left[2x + 5\right] - 4$

a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 3 \cdot f[2x + 5] - 4$?

4

Question 5

A parent square-root function is transformed in the following ways:
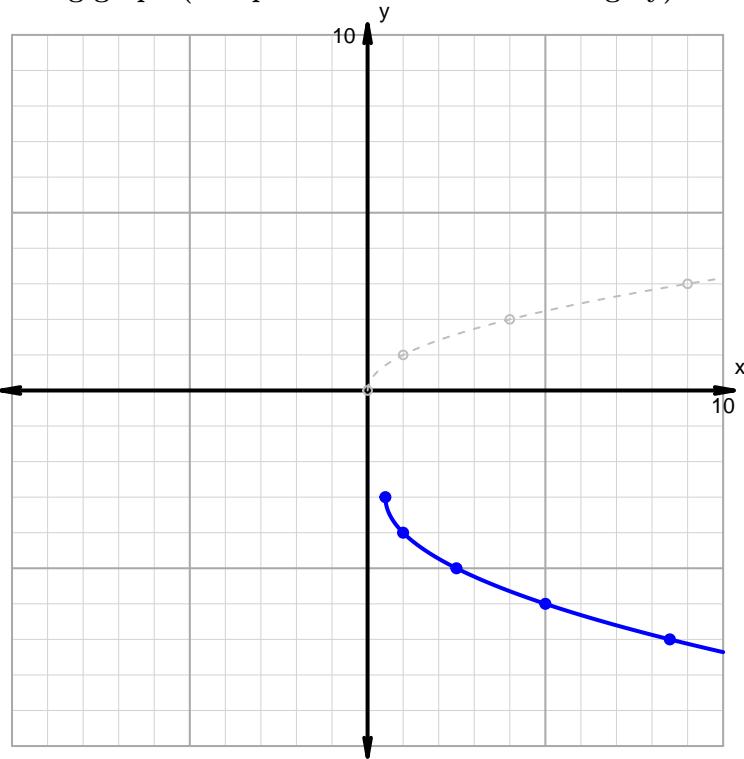
Horizontal transformations

1. Translate right by distance 1.
2. Horizontal shrink by factor 2.

Vertical transformations

1. Vertical reflection over x axis.
2. Translate down by distance 3.

Resulting graph (and parent function in dashed grey):
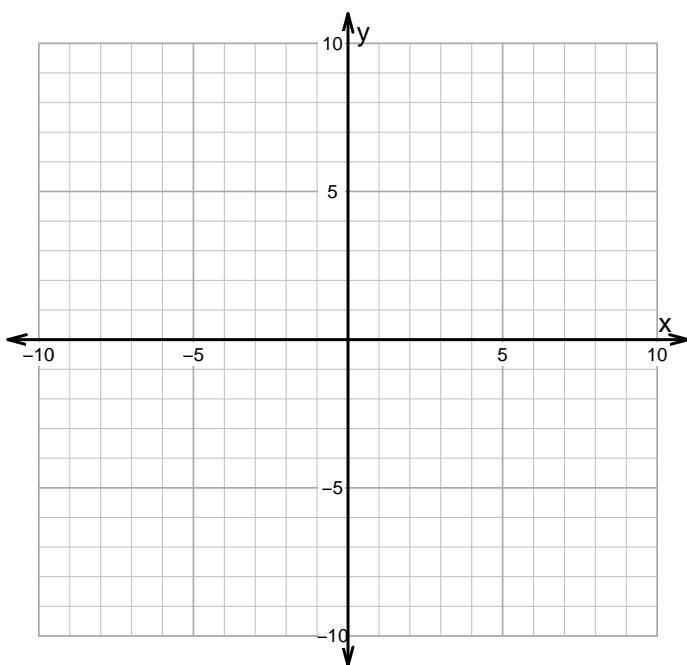
- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y = -2 \cdot |x + 6| + 4$$

Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	